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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/564,469

01/13/2006

Soichi Shibata

043888-0432

9397

20277 7590 12/08/2008
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EXAMINER

RADEMAKER, CLAIRE L

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

12/08/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,469	Applicant(s) SHIBATA ET AL.	
	Examiner CLAIRE L. RADEMAKER	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/3/08, 11/6/08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/6/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 3, 2008 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito (JP 11-354143) in view of Imamura et al. (US 2004/0038098) and Simpson et al. (US 2004/0197614).

With regard to claim 1, Saito teaches a fuel cell system (paragraph [011]; Figure 1) comprising a fuel cell (20, paragraph [0011]; Figure 1), a fuel gas supply means (1, paragraph [0012]; Figure 1) for supplying a fuel gas to an anode of said fuel cell, an oxidant gas supply means (8, paragraph [0015]; Figure 1) for supplying an oxidant gas

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to a cathode of said fuel cell, and an inert gas supply means (32, paragraph [0016]; Figure 1) for supplying an inert gas to the anode of said fuel cell (paragraphs [0008], [0010], [013], & [0017]; Figure 1), where said fuel cell is subjected to a purge operation of replacing the fuel gas and in said fuel cell with an inert gas supplied from said inert gas supply means when said fuel cell is started up or shut down (paragraphs [0008], [0010], [013], & [0017]), wherein said fuel cell system further comprises control means (46, paragraph [0016]; Figure 1) for controlling the flow rate of the purge gas supplied to said fuel cell (paragraph [0016]; Figure 1), but fails to teach a means for measuring pressure at the inlet-side flow paths leading to the anode and the cathode of said fuel cell or a means for variably controlling the flow rate of the purge gas.

Imamura et al. teaches means for measuring a pressure P_a in an inlet-side flow path leading to the anode of said fuel cell (81, paragraph [0120]; Figure 9) and a pressure P_c in an inlet-side flow path leading to the cathode (71, paragraph [0120]; Figure 9) in order to better control the pressure / flow rate and thereby limit the water diffusion from the air electrode side through the electrolyte membrane to the fuel electrode side (paragraph [0058]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the means for measuring pressures at the inlet-side flow paths leading to the anode and the cathode of Imamura et al. to the fuel cell system of Saito in order better control the pressure / flow rate and thereby limit the water diffusion from the air electrode side through the electrolyte membrane to the fuel electrode side (paragraph [0058]).

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Furthermore, it is noted that Imamura et al. teaches that the differential pressure ΔP can be defined as $\Delta P = P_a - P_c$ (paragraphs [0057]-[0058]) and that this relationship prevents water residence around the electrode portions of the fuel electrode (paragraph [0058]). Furthermore, while Imamura et al. fails to specifically state that $0 < \Delta P_o$, one of ordinary skill in the art would understand that because ΔP can be defined as $\Delta P = P_a - P_c$ where $P_a > P_c$ (Imamura et al., paragraphs [0057]-[0058]), ΔP_o can be greater than 0 (zero).

Modified Saito fails to teach a means for variably controlling the flow rate of the purge gas.

Simpson et al. teaches a fuel cell system (paragraph [0017]; Figure 1) comprising a means for variably controlling the flow rate of a purge gas (72, paragraphs [0045], [0049]-[0050], & [0039]; Figure 1) in order to maintain the desired pressure in the fuel cell system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the means controlling the flow rate of the purge gas supplied to said fuel cell of Saito with the means for variably controlling the flow rate of the purge gas of Simpson et al. in order to maintain the desired pressure in the fuel cell system.

It is noted that with regard to the purge operation and the normal operation of the fuel cell system, the limitations have been considered with regard to structure, but the operation (method) is not given patentable weight (MPEP 2106 & 2111.02). Claim 1 is drawn to a fuel cell system, which is considered a product.

With regard to claim 4, modified Saito fails to teach means for changing the internal diameter of an outlet-side flow path of an exhaust gas.

Simpson et al. teaches a fuel cell system (paragraph [0017]; Figure 1) comprising a means for changing the internal diameter of an outlet-side flow path of an exhaust gas from said fuel cell at least in stages (52 & 72, paragraphs [0045], [0049]-[0050], & [0039]; Figure 1) during the purge operation of said fuel cell (paragraphs [0045] & [0049]-[0050]) in order to maintain the desired pressure in the fuel cell system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add the means for changing the internal diameter of an outlet-side flow path of an exhaust gas from said fuel cell at least in stages during purge operation of said fuel cell of Simpson et al. to the fuel cell system of modified Saito in order to maintain the desired pressure in the fuel cell system.

It is noted that with regard to the purge operation of the fuel cell system, the limitations have been considered with regard to structure, but the operation (method) is not given patentable weight (MPEP 2106 & 2111.02). Claims 1 & 4 are drawn to a fuel cell system, which is considered a product.

Response to Arguments

Claim Rejections - 35 USC § 103

4. Applicant's arguments with respect to claims 1 & 4, filed on October 3, 2008, have been considered but are moot in the view of the new ground(s) of rejection. It is noted that with regard to the purge operation of the fuel cell system, the limitations have

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been considered with regard to structure, but the operation (method) is not given patentable weight (MPEP 2106 & 2111.02). Claims 1 & 4 are drawn to a fuel cell system, which is considered a product. Furthermore, Meltsner et al. (US 2004/0137258) is no longer used to reject claims 1 and 4.

5. Applicant's arguments with respect to claims 1 & 4, filed on October 3, 2008, have been considered but are not persuasive.

On pages 4-5 of the Applicant's Response, Applicants argue that "the cited art does not make obvious a fuel cell system that 'always satisfied the relation' recited in claim 1" Applicant's Response, page 4). In response to this argument, the Examiner would like to note that with regard to the purge operation of the fuel cell system, the limitations have been considered with regard to structure, but the operation (method) is not given patentable weight (MPEP 2106 & 2111.02). Claims 1 & 4 are drawn to a fuel cell system, which is considered a product.

On pages 5-6 of the Applicant's Response, Applicants argue that Simpson et al. (US2004/0197614) "does not disclose or suggest 'means for variably controlling the flow rate of the inert gas supplied to said fuel cell'" (Applicant's Response, page 6) and thus "Simpson [et al.] fails to bridge the above acknowledged gap between claim 1 and the cited art" (Applicant's Response, page 6).

The Examiner respectfully disagrees with the Applicants argument that Simpson et al. fails to teach the concept of variably controlling the flow rate of an inert gas supplied to said fuel cell (Applicant's Response, page 6) because Simpson et al. is used merely to teach the concept of using a means to variably control the flow rate of a purge gas (72, paragraphs [0045], [0049]-[0050], & [0039]; Figure 1) in order to maintain the desired pressure in the fuel cell system. Saito teaches that said fuel cell is subjected to a purge operation of replacing the fuel gas and in said fuel cell with an inert gas supplied from said inert gas supply means when said fuel cell is started up or shut down (paragraphs [0008], [0010], [013], & [0017]), wherein said fuel cell system further comprises control means (46, paragraph [0016]; Figure 1) for controlling the flow rate of the purge gas supplied to said fuel cell (paragraph [0016]; Figure 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the means controlling the flow rate of the purge gas supplied to said fuel cell of Saito with the means for variably controlling the flow rate of the purge gas of Simpson et al. in order to maintain the desired pressure in the fuel cell system.

On pages 7-8 of the Applicant's Response, Applicants argue that the Office Action mailed July 3, 2008 "is not responsive to the argument beginning on page 7, line 18 of the Response filed on April 2, 2008" (Applicant's Response, page 7).

The Examiner respectfully disagrees with the Applicant's argument that the Office Action mailed July 3, 2008 "is not responsive to the argument beginning on page

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7, line 18 of the Response filed on April 2, 2008" (Applicant's Response, page 7)

because pages 8-9 of the Office Action mailed July 3, 2008 clearly shows that the Examiner responded to the Applicants argument as she best understood it at that time.

The Examiner now better understand the Applicants argument, but the argument is still not persuasive because while Imamura does not specifically say that the means for measuring pressures (71, 72, 81, & 82, paragraphs [0118]-[[0122]; Figure 9), the control unit, and the means for variably controlling the flow rate are used in the specified manner, it would have been obvious to one of ordinary skill in the art at the time of the invention to use readings from all four means for measuring pressures (71, 72, 81, & 82; paragraph [0121]; Figure 9) in order to enable a more accurate and precise flow rate adjustment.

Furthermore, with regard to the rejections in this Office Action (see above), it is noted that with regard to the purge operation and the normal operation of the fuel cell system, the limitations have been considered with regard to structure, but the operation (method) is not given patentable weight (MPEP 2106 & 2111.02). Claim 1 is drawn to a fuel cell system, which is considered a product. Furthermore, it is noted that the fuel cell system of modified Saito would be capable of measuring a pressure P_a in an inlet-side flow path leading to the anode of said fuel cell, measuring a pressure P_c in an inlet-side flow path leading to the cathode of said fuel cell, and variably controlling the flow rate of the inert gas supplied to said fuel cell based on the values of P_a and P_c during a purge operation of said fuel cell.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CLAIRE L. RADEMAKER whose telephone number is (571)272-9809. The examiner can normally be reached on Monday - Friday, 8:00AM - 4:30PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. L. R./
Examiner, Art Unit 1795

/Alexa D. Neckel/
Supervisory Patent Examiner, Art Unit 1795